

IN THE CLAIMS:

The text of all pending claims, (including withdrawn claims) is set forth below. Cancelled and not entered claims are indicated with claim number and status only. The claims as listed below show added text with underlining and deleted text with ~~strikethrough~~. The status of each claim is indicated with one of (original), (currently amended), (cancelled), (withdrawn), (new), (previously presented), or (not entered).

Please AMEND claims 1 and 5 in accordance with the following:

1. (CURRENTLY AMENDED) An optical multiplexing apparatus for multiplexing a plurality of optical signals having different wavelengths, comprising:

first optical multiplexing means for multiplexing, among a plurality of optical signals that are input with directions of linear polarization of neighboring wavelengths being differed to each other and are successively given wavelength numbers depending upon the wavelengths, optical signals corresponding to odd wavelength numbers, while maintaining their polarization states;

second optical multiplexing means for multiplexing optical signals corresponding to even wavelength numbers among said plurality of optical signals, while maintaining their polarization states; and

third optical multiplexing means including:

a first input unit ~~for~~-filtering the optical signals multiplexed by said first optical multiplexing means in accordance with filter characteristics that include a transmission wavelength band with the wavelengths of odd numbers as centers, and having a band width of said transmission wavelength band which is narrower than the band width of transmission wavelength band of filter characteristics of said first optical multiplexing means;

a second input unit ~~for~~-filtering the optical signals multiplexed by said second optical multiplexing means in accordance with filter characteristics that include a transmission wavelength band with the wavelengths of even numbers as centers, and having a band width of said transmission wavelength band which is narrower than the band width of transmission wavelength band of filter characteristics of said second optical multiplexing means; and

an output unit ~~for~~-multiplexing the optical signals output from said first input unit and the optical signals output from said second input unit to output the multiplexed signal light.;

wherein said third optical multiplexing means comprises an interleaver including a first input port which corresponds to said first input unit and a second input port which corresponds to said second input unit, ~~two input ports which correspond to said first and second input units,~~ and including one output port corresponding to said output unit, and having periodic filter characteristics for each of said first and second input ports, and

wherein a band width of each transmission wavelength band in the periodic filter characteristics of said first input port of said interleaver is narrower than the band width of the transmission wavelength band in the filter characteristics of said first optical multiplexing means, and a band width of each transmission wavelength band in the periodic filter characteristics of said second input port of said interleaver is narrower than the band width of the transmission wavelength in the filter characteristics of said second optical multiplexing means.

2. (ORIGINAL) An optical multiplexing apparatus according to claim 1, wherein said plurality of optical signals are input with directions of linear polarization of neighboring wavelengths being orthogonal to each other.

3. (ORIGINAL) An optical multiplexing apparatus according to claim 1, wherein said third optical multiplexing means is provided with a function for maintaining the polarization state.

4. (CURRENTLY AMENDED) An optical multiplexing method of multiplexing a plurality of optical signals having different wavelengths, comprising:

a first optical multiplexing step of multiplexing, among a plurality of optical signals that are input with directions of linear polarization of neighboring wavelengths being differed to each other and are successively given wavelength numbers depending upon the wavelengths, optical signals corresponding to odd wavelength numbers, while maintaining their polarization states;

a second optical multiplexing step of multiplexing optical signals corresponding to even wavelength numbers among said plurality of optical signals, while maintaining their polarization states; and

a third optical multiplexing step of:

using an interleaver having ~~two~~ first and second input ports and one output port;

filtering the optical signals multiplexed by said first optical multiplexing step in accordance with periodic filter characteristics of ~~one~~ the first input port of said interleaver that include a transmission wavelength band with the wavelengths of odd numbers as centers, and having a band width of said transmission wavelength band which is narrower than the band width of the transmission wavelength band of filter characteristics of said first optical multiplexing step;

filtering the optical signals multiplexed by said second optical multiplexing means in accordance with periodic filter characteristics of the ~~other~~ second input port of said interleaver that include a transmission wavelength band with the wavelengths of even numbers as centers, and having a band width of the transmission wavelength band which is narrower than the band width of the transmission wavelength band of filter characteristics of said second optical multiplexing step; and

multiplexing the respective filtered optical signals to output the multiplexed signal light from said output port of said interleaver.

5. (CURRENTLY AMENDED) An optical multiplexing apparatus for multiplexing a plurality of optical signals having different wavelengths, including even wavelengths and odd wavelengths, comprising:

a first multiplexer having filter characteristics to multiplex the odd wavelength optical signals to produce multiplexed odd wavelength optical signals;

a second multiplexer having filter characteristics to multiplex the even wavelength optical signals to produce multiplexed even wavelength optical signals; and

an interleaver to multiplex the multiplexed odd wavelength optical signals and the multiplexed even wavelength optical signals to produce multiplexed signal light, said interleaver including:

a first input port having first periodic filter characteristics, to receive the multiplexed odd wavelength optical signals;

a second input port having second periodic filter characteristics, to receive the multiplexed even ~~odd~~ wavelength optical signals; and

an output port to output the multiplexed signal light;

wherein a band width of each transmission wavelength band in the first periodic filter characteristics of said first input port is narrower than a band width of a transmission wavelength band in the filter characteristics of said first optical multiplexer, and

a band width of each transmission wavelength band in the periodic filter characteristics of said second input port is narrower than a band width of a transmission wavelength in the filter characteristics of said second optical multiplexer.